(54) Title: SYSTEMS FOR GENERATING AND ANALYZING STIMULUS-RESPONSE OUTPUT SIGNAL MATRICES

(57) Abstract
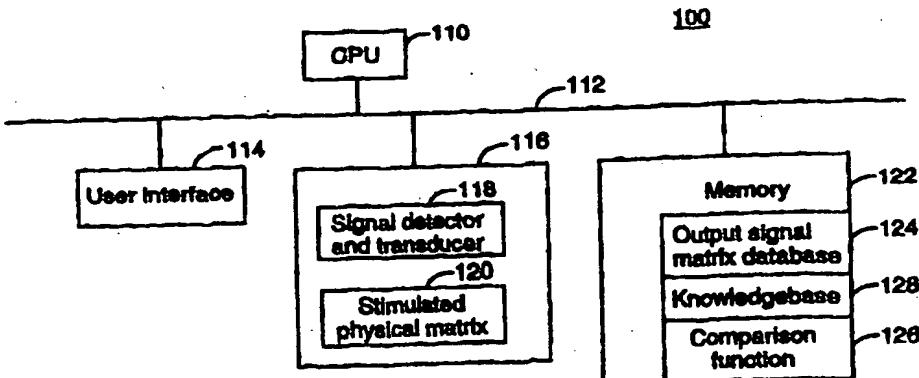
Stimulus-response patterns are analyzed using detection protocols applied through AI systems such as expert systems and neural networks. Generating an output signal matrix database involves: (i) constructing a stimulated physical matrix; (ii) detecting a physical signal at each unit of the physical matrix; (iii) transducing each physical signal to generate an electrical output signal; (iv) storing each output signal in an output signal matrix data structure; and (v) repeating steps (i)-(iv) to iteratively store output signal matrix data structures for a plurality of stimuli to form an output signal matrix database. Individual output signal matrices are compared to such output signal matrix databases according to qualitative analysis. The stimulated physical matrices comprise an ordered array of units, each confining (1) either a different responder e.g. a promoter-reporter system of a living thing or a probe corresponding to such a different responder and (2) an identifier for the responder or probe. The living thing is provided with a stimulus capable of repressing the responders of a plurality of the units and the identifier provides a physical signal corresponding to the repression of such different responder.